ABSTRACT

A high-strength forged part comprising a base phase structure and a second phase structure and containing in mass % 0.1% to 0.7% of C, 0.5% to 3% of Si and Al, 0.5% to 3% of Mn, 0.15% or less (not including 0%) of P, and 0.02% or less (including 0%) of S, wherein the base phase structure contains 30% or more of ferrite in terms of a space factor relative to the entire structure, the second phase structure comprises retained austenite, as well as bainite and/or martensite, the content of the retained austenite is represented by the following expression (1) relative to the entire structure, an average grain diameter, d, of the second phase structure is 5 μm or less, and a space factor of a coarse portion of (1.5 x d) or more in an average grain diameter contained in the second phase structure is 15% or less:

$$50X[C]<[V_{\gamma R}]<150x[C] \quad \ldots (1)$$

where $[V_{\gamma R}]$ stands for a space factor of the retained austenite (γR) relative to the entire structure and [C] stands for the content (mass %) of C in the forged part.
Or a high-strength forged part comprising a base phase structure and a second phase structure and containing in mass % 0.1% to 0.5% of C, 0.5% to 3% of Si and Al, 0.5% to 3% of Mn, 0.15% or less (not including 0%) of P, and 0.02% or less (including 0%) of S, wherein the base phase structure contains 50% or more of tempered bainite or

tempered martensite in terms of a space factor relative to the entire structure, the second phase structure contains retained austenite and martensite, the content of the retained austenite is 3% to 30% in terms of a space factor relative to the entire structure, and a portion of the retained austenite and martensite, which portion is 2 or less in an aspect ratio, is 25% or less in terms of a space factor. With such a construction, there is provided a novel high-strength forged part superior in both elongation and balance of strength and reduction of area in a high strength region of about 600 MPa or more.